

REMARKS

Applicants submit the following remarks in support of the patentability of the present invention over the disclosures of the references relied upon by the Examiner in rejecting the claims. Further and favorable reconsideration is respectfully requested in view of these remarks.

Initially, new claim 10 has been added to the application, requiring that the polymer electrolyte is formed from a mixture of the vinylidene fluoride copolymer, the nonaqueous electrolytic solution and an evaporatable solvent, by evaporating the solvent from the mixture. Support for this, particularly, with regard to the evaporatable solvent, is apparent from all of the working examples set forth in the specification.

The rejection of claims 1, 3-5 and 9 under 35 U.S.C. §102(a) or 35 U.S.C. §103(a) based on WO 98/38687 and as evidence by Mitchell et al. is respectfully traversed.

The effective date of the WO '687 reference as prior art is its publication date of September 3, 1998, which is subsequent to the filing date of December 26, 1997 for Applicants' Japanese priority application. Therefore, obtaining the benefit of this priority date will be effective to overcome the reference.

The Examiner has already acknowledged receipt of a certified copy of the priority document. A verified English translation of the priority document is submitted herewith.

Accordingly, Applicants take the position that the rejection based on the WO '687 reference should be withdrawn.

For the same reason, the rejection of claims 6-8 under 35 U.S.C. §103(a) as being unpatentable over WO 98/38687 in view of Gozdz et al. should be withdrawn.

In addition, Applicants note that claim 3 of the present application requires simultaneous addition of the monomers, as compared with separate addition of the monomers in WO '687. This separate addition of monomers in WO '687 is adopted to provide a uniform copolymer composition of vinylidene fluoride (VDF) and hexafluoropropylene (HFP) in view of a much larger reactivity of VDF than HFP (i.e., $VDF \gg HFP$). (Page 18, lines 7 to 25 of WO' 687)

As understood from the above discussion, the simultaneous addition of VDF and HFP (as the monomers) recited in claim 3 of the present application provides a VDF/HFP copolymer having a

substantial compositional gradient giving a higher HFP concentration in the later-polymerized portion of the copolymer, which has been found to provide a higher gel (i.e., polymer electrolyte) strength and a higher capacity of retaining the electrolytic solution, representing higher polymer electrolyte performances.

Contrary to the position taken by the Examiner, such a process limitation, which results in a substantial difference in products, should not be ignored in evaluating the patentability of the subject matter of claim 3, including the process limitation.

The rejection of claims 1 and 3-9 under 35 U.S.C. §102(b) or 35 U.S.C. §103(a) based on WO 97/18596 is respectfully traversed.

The Examiner takes the position that the WO '596 reference discloses copolymer of vinylidene fluoride preferably having molecular weight of 1,000-10,000,000, preferably from 5,000 to 2,000,000, and more preferably from 10,000 to 1,000,000, referring to column 14, lines 23 to 28 of US 6,284,412, which is relied upon for a translation of WO '596.

However, although these molecular weight ranges overlap the molecular weight range of the vinylidene fluoride copolymer employed in the present invention (considering that the lower limit of 1.7 dl/g for the inherent viscosity in the present invention roughly corresponds to a Mw of 500,000), such molecular weight ranges in the reference are very broad; and Applicants take the position that WO '596 does not substantially disclose or suggest a vinylidene fluoride polymer having a high molecular weight as high as 500,000 or higher represented by an inherent viscosity of 1.7 or higher as in the present invention. This would be clear to a skilled artisan from the description at column 26, lines 56 to 62 of US '412, which states:

A hexafluoropropylene/vinylidene fluoride copolymer resin (hexafluoropropylene content: 5% by weight) was subjected to extrusion molding at an extrusion die temperature of 230°C, ---, thereby obtaining a molded sheet having a thickness of 150 μm.

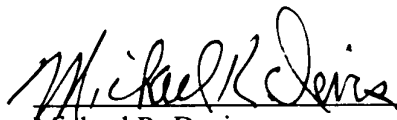
In order to corroborate this argument, please see the attached Rule 132 Declaration of Y. Teramoto, who is an employee of the Assignee of the present application.*

In view of these considerations, Applicants respectfully submit that the WO '596 reference neither anticipates nor suggests the presently claimed invention.

Therefore, in view of the foregoing remarks, it is Applicants' position that each of the grounds of rejection set forth by the Examiner has been overcome, and that the application is in condition for allowance. Such allowance is solicited.

Respectfully submitted,

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* The enclosed Declaration is unexecuted, and it is expected that the executed Declaration will be filed in ten (10) days or so.